⊗ Ontario

Ministry of
Health and Long-Term Care

PHERO
Public Health and Epidemiology Report Ontario

"FOLIC ACID. IT'S NEVER TOO EARLY." THE EFFECTIVENESS OF A PRECONCEPTION HEALTH EDUCATION CAMPAIGN

Introduction

This year, an estimated 300 Canadian children will be born with a neural tube birth defect.[1] Neural tube defects (NTDs), birth defects that affect the brain and/or spinal cord, occur early in pregnancy (between the 17th and 30th day after conception). This is often before most women even know that they are pregnant. A systematic review by Lumley, Watson, Watson and Bower (2001) suggests that periconceptional folate supplementation has a strong protective effect against neural tube defects.[2] Since many pregnancies in Canada are unplanned, Health Canada recommends that all women of childbearing age take a daily multivitamin containing a minimum of 0.4 mg of folic acid.[3]

In 2002, the Folic Acid Alliance of Ontario developed and implemented a public awareness and education campaign to provide concise, consistent, relevant information regarding folic acid in the prevention of NTDs, to women of childbearing age and health care professionals across the province.

Background

The Folic Acid Alliance of Ontario is made up of representatives from The Fetal Centre at The Hospital for Sick Children, Spina Bifida and Hydrocephalus Association of Ontario, The Easter Seal Society of Ontario, Ontario Society of Nutrition Professionals in Public Health and Best Start: Ontario's Maternal, Newborn and Early Child Development Resource Centre.

The 2002 Provincial Folic Acid Campaign was funded by the Ontario Early Years Challenge Fund from the Ministry of Community and Social Services, the Public Health Branch of the Ministry of Health and Long-Term Care, the Easter Seal Society of Ontario, the Centrum Foundation and in part by Health Canada.

The extensive province-wide public awareness and education campaign targeted women of childbearing age (18 – 45 years old) and Ontario health care professionals. It was a multi-collateral and multi-channel campaign that involved three key initiatives:

1. a consumer (women of childbearing age) public awareness and education initiative,
2. a grassroots community outreach initiative, and
3. a physician and health care professional education component.

Through broad-based education, The Folic Acid campaign sought to measurably impact the number of women of childbearing age who are aware of the critical connection between proper folic acid consumption (including timing and dose of folic acid, and food sources of folate) and birth defects. The campaign also aimed to measurably impact the number of women of childbearing age taking a daily vitamin supplement containing a sufficient amount of folic acid. Another objective of the campaign was to ensure that all health care professionals are recommending adequate consumption of folic acid and that they are providing consistent information to patients.

The theme for the 2002 campaign was "Folic acid. It's never too early." This message was displayed on a bold, colourful background, with a graphic image of sperm moving toward an egg. This creative look and message was focus group tested and applied to all campaign material (posters, brochures, website, magazine and transit ads).

Methodology

The FAAO developed campaign collateral material that was distributed and used in each of the three key initiatives.

1. Consumer Awareness

Posters and brochures were produced in both English and French and distributed to public health units and health care professionals across Ontario. The intent of the posters and brochures was to encourage women to take folic acid before becoming pregnant, consult with their physician and visit the folic acid website for more information. Magnets were also produced and sent to public health units for distribution. The Folic Acid Alliance of Ontario's bilingual website (www.folicacid.ca) is an online resource for the public, health care providers and community health agencies. The campaign also included magazine and transit advertising, as well as media relations.

2. Community Outreach

The Alliance also developed a Community Action Guide for local community groups. This Guide provided a step-by-step process for creating and implementing a local level community outreach campaign. The Guide was accompanied with copies of the campaign poster (available in English and French), the brochure (available in English and French), magnets, sample media material, and sample 30-second script for radio public service announcements. These community groups were encouraged to host exhibits/displays at shopping malls, doctor's offices, clinics, pharmacies, hospitals, public health care offices, etc. and to deliver presentations to women in their respective communities.

3. Health Care Professionals

A 2-colour, 6-page newsletter was developed and distributed to approximately 9,600 health care providers including family physicians, obstetricians and gynecologists, midwives and pharmacists across Ontario, along with copies of the campaign poster and brochures. The FAAO also distributed Health Canada's "Pre-conception Health: Folic Acid for the Primary Prevention of Neural Tube Defects Report".

Campaign Results

The 2002 Folic Acid Awareness and Education Campaign successfully reached women of childbearing age and health care providers with key information about the connection between folic acid and neural tube defects.

1. Consumer Awareness

The Folic Acid Alliance of Ontario commissioned Ipsos-Reid to conduct pre- and post-campaign surveys of Ontario women to measure their understand-

ing and awareness of folic acid in connection with neural tube defects. The studies were conducted through random digit dialing as part of national and provincial omnibus surveys. Due to the length of the survey, resource constraints and difficulty in recruiting women of childbearing years through random digit dialing, the sample size was reduced to N=300, while still maintaining sufficient numbers per unit area to ensure reliable estimates for the primary questions of interest.

The pre-campaign survey was conducted in September 2001 with telephone interviews conducted using a random sample of 377 Ontario women between the ages of 18 and 40 years of age. Of the 377 Ontario women surveyed, 301 responded affirmative to the question "Have you heard of folic acid?" The remainder of the telephone survey was conducted using these 301 women.

The post-campaign survey was completed in August 2002 with a new sample of Ontario women. Using random digit dialing, telephone interviews were conducted with a sample of 308 women between the ages of 18 and 40 years of age. Results for the post-campaign survey are based on the 242 respondents who had responded affirmative to the question "Have you heard of folic acid?"

Post-campaign survey results revealed that women understood that in order for folic acid to reduce the risk of birth defects, a woman must begin planning for adequate folic acid consumption before conception. This would include dietary sources of folate and/or consumption of a daily multivitamin containing folic acid. Table 1 highlights the increase in awareness and understanding of folic acid among women surveyed following the campaign.

Table 1

Increase in awareness and understanding of folic acid among women 18 – 40 years old

	2001	2002
Ontario women between the ages of 18 – 40 years of age who are aware of folic acid	N=301	N=242
Understand that in order for folic acid to prevent birth defects a woman should start taking it before conception	65%	78%
Understand that they need to add a multivitamin with folic acid to their diet	67%	79%
Indicate that they are 'very' or 'somewhat' likely to take folic acid supplements if they were planning to have a child	65%	81%

Table 2 illustrates that women who are planning to have children in the next three years have a greater understanding of folic acid than those who do not plan to have children.

Table 2

Awareness and understanding of folic acid among women 18 – 40 years old – specifically those planning to have children in the next three years

	Women who say they are somewhat or very likely to have children in the next three years (n=95)	Women 18 – 40 years old. All respondents who have heard about folic acid (n=242)
Aware that folic acid is beneficial to pregnant women (open-ended responses)	53%	47%
Aware that folic acid prevents birth defects (open-ended responses)	41%	32%
Know enough about folic acid to decide whether or not they should be taking it	60%	43%
Aware that a woman should start taking folic acid before conception to reduce the risk of birth defects	83%	78%
Aware that in order to prevent birth defects they need to add a multivitamin to their diet before getting pregnant	88%	79%

The post-campaign survey also measured the effectiveness of the campaign advertising and found that, while the recall of the appearance and sponsorship of the ad was low, recall of the main message was high. Refer to Table 3.

Table 3

The effectiveness and recall of the Folic Acid campaign advertising

Heard about folic acid through advertising	49% (n=242 aware of folic acid)
Did not recall the main message of the advertisement	28% (n=119 aware of advertisement)
Recall "Take folic acid before you get pregnant" as the main message	19% (all mentions)
Recall "Folic acid reduces the risk of birth defects" as the main message	14% (all mentions)
Recall "Take a daily multivitamin containing folic acid" as the main message	5% (all mentions)

2. Community Outreach

The Alliance included a fax-back survey in the Community Action Guide that was sent to 37 public health units and 119 other community health agencies across Ontario. Of the 156 participating community groups, the Folic Acid Alliance of Ontario received 57 fax-back surveys. At the time of the survey, many of the community health agencies were still in the process of implementing their community campaigns and therefore did not complete the survey.

Of the respondents (n= 57) who did complete the fax-back survey:

- 98% said they used the Community Action Guide to promote the consumption of folic acid in their communities.

- Overall, recipients felt that the Guide and the campaign resource material were effective.

- 77% said the presentation and quality of information in the Guide was easy to understand and follow, and 89% said the amount of information was about right.

- 56% said it was their first time promoting folic acid.

3. Health Care Professionals

The Folic Acid Alliance of Ontario conducted a pre-campaign fax-back survey to benchmark understanding and practices of health care professionals around the folic acid issue. The survey was sent to a random sample of 3,373 Ontario health care professionals (HCPs) (provided by the Fetal Centre at the Hospital for Sick Children), including family physicians, obstetricians and gynecologists, midwives and pharmacists in the Fall of 2001. Responses were received from 539 family physicians, 181 obstetricians and gynecologists, 45 midwives, 373 pharmacists for a total response rate of 34 percent. A post-campaign fax-back survey, targeted to the same group, was conducted in August 2002 and responses were received from 352 family physicians/pediatricians, 10 midwives, 35 pharmacists, 40 obstetricians/gynecologists and 9 genetics counselors. There was a significantly lower response rate to the follow-up survey likely because due to budgetary and time constraints. Regular reminders to ensure return of surveys, based on the Dillman method (2000), were not implemented as was previously done with the pre-campaign survey. [4]

The 2002 Provincial Folic Acid campaign effectively reached Ontario health care professionals with key information about folic acid, as seen in Table 4. As a result of the campaign, more than half of health care professionals are discussing the connection between folic acid and neural tube defects with their patients and can identify women who are at higher risk of having a pregnancy affected by NTDs. As a result of the campaign, most of the health care professionals that recall receiving the Folic Acid campaign brochures and posters (279 of 309), made them available to their patients.

Table 4

Understanding and practice of Health Care Professionals re: folic acid

	2001 (n=1138)	2002 (n=446)
Agree strongly that pre-conceptional folic acid can help reduce the risk of NTDs	75%	90%
Always or often discuss the connection between folic acid and NTDs with their patients	33%	70%
Strongly agree that the risk of NTDs can be reduced by consuming a folate-rich diet and a multivitamin supplement that contains folic acid	51%	73%
When asked if they counsel patients at high risk differently, said yes	69%	87%

Conclusion

Despite the significant impact the folic acid campaign has made on knowledge of folic acid, especially among women who are planning to have children in the next three years, there remains some areas that require further education based on campaign survey results:

- Many women are still not aware of the daily dosage of folic acid recommended to reduce the risk of birth defects.
- Maternal age is mistakenly believed to be the most common risk factor for spina bifida.
- Many women of childbearing age are unable to accurately identify foods sources of folate.
- Only 35% of women interviewed were currently taking a multivitamin containing folic acid. Survey results suggest that women require further education in the following areas:
  - The correct daily dosage of folic acid required to help reduce the risk of NTDs.
  - The need for increased dosage for women at higher risk.
  - The need for periconceptional planning for folic acid intake.
  - Food sources of folate.
  - The importance of taking a daily multivitamin containing folic acid.

According to survey results, understanding and behaviour among health care professionals (HCPs) has changed in some areas regarding the practice of recommending folic acid; however, there still remains a few areas that require continued education. Areas for further education and communication include:

- Improving HCPs ability to recommend a specific dose of folic acid supplementation for low and high risk groups of women. (Survey results revealed that only 63% of HCPs recommend 0.4 mg of folic acid daily for women at low risk of NTDs.)
- Improving consistency among HCPs regarding the timing of initiation of folate consumption. (Survey results revealed that more than half of HCPs recommend that patients begin taking folic acid before conception, but were inconsistent in the timing required for patient initiation and duration of folate consumption.)
- Improving HCPs ability to accurately identify food sources containing folate.

Continued education and communication for women of childbearing age, and their HCPs, is required, to ensure

that they are delivering correct and consistent information to their patients of childbearing age.

Next steps

The Folic Acid Alliance of Ontario desires to leverage its learning from the 2002 campaign and has identified the above-mentioned areas for continued communication and education. However, currently the Folic Acid Alliance of Ontario does not have the financial resources required to execute a follow-up campaign. It is currently investigating funding opportunities and strategic partnerships in order to implement follow-up activities and share resources.

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THE GINI COEFFICIENT OF INCOME DISPARITY OF ONTARIO BY CENSUS DIVISIONS IN 1996 AND 2001

Introduction

The Gini Coefficient of Income Disparity (also known as the Gini Concentration Ratio) (Lorenz, 1905) is a widely accepted numeric measurement of the inequality of income distribution in a community. It can be derived from household income distribution that is one major data item collected in both the 1996 and 2001 Population Census of Canada.

The Gini Coefficient is usually associated with the use of the Lorenz Curve (Figure 1) which visually displays disparity in distribution. The Lorenz Curve shows the percentage of income received (y-axis) by the cumulative per cent of households (x-axis). If incomes are equally distributed and every household had the same income, the Lorenz Curve will follow the reference diagonal line exactly and the corresponding Gini Coefficient of Income Disparity will be zero (y=x). The extent to which the Lorenz curve diverges from the diagonal illustrates the degree of inequality of income distribution.

This paper studies and compares the Gini Coefficients of Income Disparity of Ontario and the 49 census divisions between 1996 and 2001, based on the population census data. It also explores the correlation between Gini Coefficients of Income Disparity and six other socio-economic indicators: (1) average household income, (2) unemployment rate, (3) percentage of lone parent households, (4) percentage of low income households, (5) percentage of low education adults, and (6) percentage of non-official languages households. The Gini Coefficients of Income Disparity of the 37 health units in Ontario in 2001 are also calculated and presented in this paper.

Lorenz Curves of Income Distribution

Figure (1) shows that the Lorenz Curve of Income distribution of Ontario in 2001 is very close to that in 1996, both curves show a slight disparity of household income. Only one marked difference is observed. In 1996, the top 11% of the high-income private households earned 30% of the total income earned by all private households; in 2001, the corresponding percentages are 11% and 25%. This result suggests that the degree of income inequality in Ontario has been reduced between 1996 and 2001.

Gini Coefficient of Income disparity

The Gini Coefficient of Income Disparity is based on the

Figure 1
Lorenz Curve of Income Distribution, Ontario 1996 and 2001
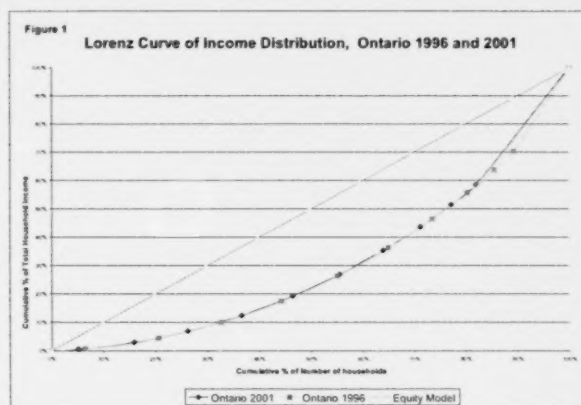
area between the diagonal line and the Lorenz Curve. If household incomes were equally distributed between households (totally equal distribution, or zero income disparity), the Gini Coefficient would equal to zero; if all the income owned by one household (totally unequal distribution, or maximum income disparity), the Gini Coefficient would equal to one. Accordingly, the larger the Gini Coefficient of Income Disparity, the higher extent of income disparity.

Using available data on household income, the Gini Coefficient of Income Disparity is calculated by the use of the following formula:

$$G_i = 1 - \frac{\sum_{i=1}^{n}[(X_{i+1} - X_i)*(Y_i + Y_{i+1})]}{\sum_{i=1}^{n}(X_{i+1} - X_i)*\sum_{i=1}^{n}(Y_{i+1} - Y_i)}$$

Where G is the Gini Coefficient of Income Disparity.
X_i is the cumulative percentage of households.
Y_i is the cumulative percentage of total household income.
The numerator represents the area under the Lorenz curve.
The denominator represents the area under the diagonal.

The above formula was applied to the 1996 and 2001 Census data on household income distribution. Gini Coefficients of Income Disparity were calculated for Ontario and each of the 49 census division in both 1996 and 2001, and for the 37 health units in 2001 with the use of a SPSS syntax program which can be shared with readers upon written request. Table (1) below illustrates the application of 1996 and 2001 Census data of Ontario to the formula.

Table (1) Gini Coefficient of Income Disparity of Ontario, 1996 and 2001.

- An illustration of the use of the formula

Table 1

Computation of Gini Coefficient of Income Disparity
A Hypothetical Model

Ontario 1996 Census Data

Household Income	Number of Households	Percent of Households	Estimated Total Income	yi Cumulative % of Householdss	Xi Cumulative % of Total Income	Xi*Yi+1	Xi+1*Yi
Under $10,000	251385	6.41%	1256925000	6.41%	0.59%	0.00120	0.00285
$ 10,000 - $19,999	553265	14.10%	8298975000	20.50%	4.45%	0.01452	0.02048
$ 20,000 - $29,999	475580	12.12%	11889500000	32.62%	9.99%	0.04413	0.05671
$ 30,000 - $39,999	453685	11.56%	15878975000	44.18%	17.39%	0.09568	0.11625
$ 40,000 - $49,999	425920	10.85%	19166400000	55.03%	26.31%	0.17067	0.19918
$ 50,000 - $59,999	385650	9.83%	21210750000	64.86%	36.19%	0.26561	0.30047
$ 60,000 - $69,999	334690	8.53%	21754850000	73.39%	46.33%	0.37148	0.40841
$ 70,000 - $79,999	266925	6.80%	20019375000	80.19%	55.65%	0.47521	0.51109
$ 80,000 - $89,999	204200	5.20%	17357000000	85.39%	63.73%	0.56824	0.60007
$ 90,000 - $99,999	147715	3.76%	14032925000	89.16%	70.27%	0.70271	0.89158
$100,000 and over	425510	10.84%	63826500000	100.00%	100.00%	0.00000	0.00000
Sum	3924525	100.00%	214692175000			2.7095	3.1071
Gini Coefficient (Difference of Sums)							**0.3976**

Ontario 2001 Census Data

Household Income	Number of Households	Percent of Households	Estimated Total Income	yi Cumulative % of Householdss	Xi Cumulative % of Total Income	Xi*Yi+1	Xi+1*Yi
Under $10,000	218215	5.17%	1091075000	5.17%	0.40%	0.00063	0.00148
$ 10,000 - $19,999	451345	10.70%	6770175000	15.87%	2.86%	0.00747	0.01079
$ 20,000 - $29,999	433495	10.27%	10837375000	26.14%	6.80%	0.02485	0.03238
$ 30,000 - $39,999	438770	10.40%	15356950000	36.54%	12.39%	0.05748	0.07016
$ 40,000 - $49,999	416275	9.87%	18732375000	46.41%	19.20%	0.10643	0.12446
$ 50,000 - $59,999	380900	9.03%	20949500000	55.43%	26.82%	0.17138	0.19550
$ 60,000 - $69,999	357320	8.47%	23225800000	63.90%	35.27%	0.25075	0.27830
$ 70,000 - $79,999	303725	7.20%	22779375000	71.10%	43.55%	0.33572	0.36517
$ 80,000 - $89,999	252550	5.99%	21466750000	77.09%	51.36%	0.42088	0.45055
$ 90,000 - $99,999	205145	4.86%	19488775000	81.95%	58.45%	0.58447	0.81948
$100,000 and over	761660	18.05%	114249000000	100.00%	100.00%	0.00000	0.00000
Sum	4219410	100.00%	274947150000			1.9601	2.3483
Gini Coefficient (Difference of Sums)							**0.3882**

Table (1) shows that only a small change was detected in the Gini Coefficients of Income Disparity of Ontario in 1996 and 2001, being 0.3976 and 0.3882 respectively. Ontario has a smaller Gini Coefficient of Income Disparity in 2001 than in 1996, showing a 2.4 percentage point difference $(1-0.3976/0.3882 = 1-1.02421 = -0.024)$. It is noted that the number of households with income over $100,000 in 2001 (761,660, accounting for 18% of all households) is almost double that of 1996 (425,510 households, accounting for 11% of all households). This means that more households were enjoying high income ($100,000 and over) in 2001 than in 1996, thus reduces the inequality of income disparity and results in a smaller Gini Coefficient of Income Disparity.

Gini Coefficient of Income Disparity by Census Division, 1996 and 2001

Table (2) presents the Gini Coefficients of Ontario and the 49 census divisions in 1996 and 2001.

In 1996, the highest four Gini Coefficients of Income Disparity were:

- Toronto Division - 0.4258
- Timiskaming District - 0.4140
- Sudbury Division - 0.4081
- Algoma District - 0.4078

The lowest four Gini Coefficients of Income Disparity were:

- Halton Regional Municipality - 0.3511
- Dufferin County - 0.3511
- York Regional Municipality - 0.3535
- Peel Regional Municipality - 0.3540

The range lies between 0.3511 and 0.4258.

In 2001, the highest four Gini Coefficients of Income Disparity were:

- Timiskaming District - 0.4152
- Sudbury Division - 0.4120

- Manitoulin District - 0.4091
- Toronto Division - 0.4089

The lowest four Gini Coefficients of Income Disparity were:

- York Regional Municipality - 0.3228
- Halton Regional Municipality - 0.3250
- Peel Regional Municipality - 0.3360
- Durham Regional Municipality - 0.3436

The range lies between 0.3228 and 0.4152.

In both 1996 and 2001, the range of Gini Coefficients of Income Disparity among the 49 census divisions was small; it lies between 0.35 and 0.43 in 1996, and between 0.32 and 0.42 in 2001. This suggests the following: (i) the differences of household income disparity among the 47 census divisions in Ontario are small, and (ii) the changes of Gini Coefficients of Income Disparity between 1996 and 2001 are slight both at the provincial and census division level.

It is interesting to note that the census divisions with the highest four Gini Coefficients of Income Disparity in 1996 are identical with that in 2001 although with different ranking. Whereas, three out of four census divisions with the lowest four Gini Coefficients of Income Disparityare identical in 1996 and 2001. This further supports the observation that the Gini Coefficients of Income Disparity at both provincial and census division level do not change markedly between 1996 and 2001.

In 2001, of the 49 census divisions, 21 (43%) have higher Gini Coefficients of Income Disparity than the provincial total and 26 (57%) have lower. This pattern is very different from that observed in 1996 when there were only 7 census divisions (14%) with higher, 41 (84%) with lower, and 1 (2%) equal to the provincial Gini Coefficients of Income Disparity.

Income disparity, measured by the Gini Coefficients of Income Disparity, does not reflect remoteness or urban location of the census divisions in 1996 and 2001.

In 1996, 2 of the 7 census divisions with higher Gini Coefficients of Income Disparity than the provincial total were in large urban cities: Toronto and Hamilton, both are located in the central east part of Ontario. The other 5 census divisions with higher Gini Coefficients of Income Disparity than the provincial total were in remote areas in the northern part of Ontario. On the other hand, the 41 census divisions with Gini Coefficient of Income Disparity lower than the provincial average were spread all over the province, in both urban and rural areas.

In 2001, compared to the provincial total, the 21 census divisions with higher Gini Coefficients of Income Disparity and the 25 census divisions with lower Gini Coefficients were spread all over Ontario. These findings suggest that the geographic location of a census division in Ontario does not correlate with the value of Gini Coefficient of Income Disparity.

It should be noted that household income is only one of the three major socio-economic indicators (income, education and occupation); it does not indicate the level of education, occupation, and the number of people who contribute to the household income. Since the calculation of Gini coefficient is solely based the distribution of income, it is by no mean a comprehensive indicator of the socio-economic status of a community. A whole series of demographic, social and economic indicators should be used to show the socio-economic status of a community.

Correlation between Gini Coefficients of Income Disparity and other socio-economic indicators derived from the Census 2001 data

Six socio-economic indicators, namely average household income, unemployment rate, percentage of lone parent households, percentage of low income households, percentage of low education adults, and percentage of non-official languages households for the 49 census divisions were also derived from census 2001 data. A correlation coefficients matrix among the Gini Coefficient of Income Disparity and these six indicators, was calculated for the 49 census divisions within Ontario (Table 3).

Table 3 shows that the Gini Coefficient of Income Disparity is highly correlated with:

1. Unemployment rate among people age 15 and over ($r = 0.657$),

2. Incidence rate of low income among all economic families ($r = 0.640$),

3. Low education (below Grade 9) rate among people age 20 and over ($r = 0.550$), and

4. Average household income of all private households ($r = - 0.736$).

All the four correlation coefficients quoted above are significant at the 0.01 level (i.e. only one incorrect conclusion may be found out of 100 conclusions made). These results indicate that the Gini Coefficient of Income Disparity varies in the same direction as unemployment rate, low-income incidence rate and per cent of low education. The higher

Correlation Matrix among Gini coefficient of Income disparity and Six Socio-economic Indicators

		Gini Coefficient of Income Disparity	Per cent of low education (below Grade 9) among population age 20 and over	Total pmate households: Average household income	Unemployment rate among population 15 years and over	Incidence rate of low income among all economic families	Per cent of non-official languages among single response	Per cent of lone parent families among all census families in pmate households
Gini Coefficient of Income Disparity	r	1.000						
	N	49						
Per cent of low education (below G9) among population age 20 and over	r	0.550	1.000					
	N	49	49					
Total private households: Average household income	r	-0.736	-0.544	1.000				
	N	49	49	49				
Unemployment rate among population 15 years and over	r	0.657	0.616	-0.491	1.000			
	N	49	49	49	49			
Incidence rate of low income among all economic families	r	0.640	0.396	-0.255	0.584	1.000		
	N	48	48	48	48	48		
Per cent of non-official languages among single response	r	-0.232	-0.043	0.625	-0.118	0.340	1.000	
	N	49	49	49	49	48	49	
Per cent of lone parent families among all census families in private households	r	-0.058	0.183	0.015	0.226	0.015	0.070	1.000
	N	49	49	49	49	48	49	49

Notes:
(1) r is Pearsons correlation coefficient which ranges from -1.0 to +1.0 .
(2) Correlation which is significant at the 0.01 level (2-tailed) is indicated by the shaded areas.

the unemployment rate, low income incidence rate, or per cent of low education, the higher the extent of income disparity in a community. On the other hand, a high negative correlation is observed between average household income and the Gini Coefficient of Income Disparity; this indicates that as the average household income decreases, the extent of income disparity increases.

Two socio-economic indicators have low and very low correlation with the Gini Coefficient of Income Disparity. These are:

1. per cent of non-official languages among single responses (r = 0.232), and

2. per cent of lone parent families among all census families (r = -0.058).

Based on the correlation matrix explored above, communities with low "average household income", high "unemployment rate", high "low income incidence rate", or high "low education rate" can predict a higher "income disparity" or higher Gini Coefficient. Census divisions such as Toronto, Timiskaming, and Sudbury District belong to this category. On the contrary, census divisions such as Halton Regional Municipality, York Region, and Dufferin County which have high "average household income" and low "unemployment rate", low "low income incidence rate", or low "low education rate" tend to have a lower "income disparity" or lower Gini Coefficient.

Gini Coefficients of Income Disparity by health units of Ontario in 2001

The analysis presented in the preceding sections is based on census division data (not the health unit data) of Gini Coefficient of Income Disparity and other socio-economic indicators. The rationale for choosing the 49 census divisions, over the 37 health unit data, was to provide a more reliable statistical result when computing the correlation matrix. However, for the convenience of health unit staff, the Gini Coefficients of Income Disparity of the 37 health units in 2001 are also calculated and presented in Table 4.

Table 4

Coefficient of Income Disparity by Health Unit, Ontario
Based on Income of All Private Household
2001 Census Data

Health unit identification code	Total no. of private households - 20% Sample Data	Gini Coefficient of Income Disparity
2226 The Algoma District Health Unit	47530	0.4036
2227 Brant County HU	44905	0.3872
2230 Durham Regional HU	171695	0.3435
2231 Elgin-St. Thomas HU	30180	0.3745
2233 Grey-Bruce HU	60055	0.3905
2234 Haldimand-Norfolk HU	38490	0.3733
2235 Haliburton, Kawartha, Pine Ridge District HU	62925	0.3777
2236 Halton Regional HU	133660	0.3250
2237 City of Hamilton HU	188155	0.4047
2238 Hastings and Prince Edward Counties HU	60140	0.3861
2239 Huron County HU	22405	0.3700
2240 Chatham-Kent HU	42085	0.3892
2241 Kingston, Frontenac and Lennox and Addington HU	70445	0.3964
2242 Lambton HU	49215	0.3930
2243 Leeds, Grenville and Lanark District HU	62235	0.3770
2244 Middlesex-London HU	160965	0.3992
2245 Muskoka-Parry Sound HU	31880	0.3820
2246 Niagara Regional Area HU	162420	0.3884
2247 North Bay and District HU	37040	0.4079
2249 Northwestern HU	27375	0.3876
2251 City of Ottawa HU	301765	0.3708
2252 Oxford County HU	37270	0.3675
2253 Peel Regional HU	308845	0.3359
2254 Perth District HU	27440	0.3682
2255 Peterborough County-City HU	49640	0.3886
2256 Porcupine HU	33010	0.4058
2257 Renfrew County and District HU	37565	0.3796
2258 The Eastern Ontario HU	70455	0.3923
2260 Simcoe County District HU	137145	0.3679
2261 Sudbury and District HU	76100	0.4123
2262 Thunder Bay District HU	60235	0.3916
2263 Timiskaming HU	14320	0.4155
2265 Waterloo HU	161115	0.3706
2266 Wellington-Dufferin-Guelph HU	85445	0.3623
2268 Windsor-Essex County HU	141195	0.3897
2270 York Regional HU	223080	0.3227
3895 City of Toronto HU	943080	0.4089
Ontario total	**4219410**	**0.3882**

Table (4) Gini Coefficient of Income Disparity by Health Unit in Ontario

- Based on the 2001 Census Data

As expected, health units with high Gini Coefficients of Income Disparity include Timiskaming Health Unit, Sudbury and District Health Unit, and City of Toronto Health Unit

which are consistent with census divisions with a high-income disparity. Similarly, health units with low Gini Coefficients of Income Disparity include York Region Health Unit, Halton Regional Health Unit, and Peel Regional Health Unit which are also consistent with census divisions which have low-income disparity.

Use of Gini Coefficient of Income Disparity in Public Health

The Gini Coefficient of Income Disparity presented in this article is one possible income-related indicator to be considered for the General Standard of Equal Access, which is one of the three general standards of the Mandatory Health Program and Services Guidelines (1998). Knowing that a community has a high extent of income disparity may be helpful in setting policies and priorities for program planning and evaluation.

When devising equity-adjusted or needs-adjusted funding models for different health programs, income-related indicators have been considered. These include: "incidence rate of low income persons" and "low income incidence of households with children aged under six" which have been adopted in the 1996 Public Health Funding Allocation Model and the Healthy Babies Healthy Children Funding Allocation Models respectively. The addition of the Gini Coefficient of Income Disparity as a new indicator for the public health funding allocation models is encouraging due to the recent availability of the 2001 Population Census data for the calculation of this coefficient in 2001.

It is also suggested that the Public Health Indicators Working Group (PHIWG) considers the possibility of adding the Gini Coefficient of Income Disparity as a health determinant in their list of public health indicators.

Acknowledgement

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❑

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Ottawa

PARENTAL INTERACTION WITH CHILDREN
RESULTS FROM THE 2001 CITY OF OTTAWA PARENTING SURVEY

The health and well being of children 0-5 years is of great interest to the community. Recent research tells us that investing in prevention and early intervention for children from the prenatal period to age six increases readiness for school and ultimately leads to healthier and more productive lives. This has been the subject of a broad-based multi-sector community initiative in Ottawa called Success by Six. A key strategy is influencing the knowledge attitudes and behaviour of parents of children 0-5. Random telephone surveys, such as the Rapid Risk Factor Surveillance System (RRFSS), do not generate enough responses from this group to evaluate the impact of these initiatives.

To address this need, in 2001, the City of Ottawa, Community Services Branch commissioned this cross-sectional survey to provide information about:

- awareness of, access to, and use of services in the community;
- parenting behaviours;
- family functioning and available support;
- school readiness;
- health impacts on children;
- parental stress and coping;
- preventive behaviours;
- neighbourhood characteristics; and
- socio-demographic characteristics.

The paper will discuss the results on parenting behaviours such as how parents interact with their children and where parents get information and advice on parenting.

METHODS

This survey was conducted in June of 2001 by telephone interviews with a random sample of 1,205 parents of children under the age of six. To be eligible to participate in the survey, a household had to have a child under the age of six. Survey respondents were asked at the beginning of the survey if they had a child under the age of six living in the household.

The sampling frame for the survey targeted neighbourhoods with a large proportion of families with children. Computer sampling methods identified 19,675 residential numbers, of which 15,710 households were asked to participate in the survey. There were 14,450 households that were disqualified because they did not have a child under the age of six in their household. Of the remaining 1,260 eligible households, there were 55 refusals. A total of 1,205 questionnaires were completed for a response rate of 96%.

Questionnaire design

An advisory committee comprised of representation from the City of Ottawa Community Services and Public Health Branches, University of Ottawa, and Success by Six guided the questionnaire design. To facilitate comparability of information over time and with other communities, a decision was made to use, where appropriate, standard questions developed and tested by Statistics Canada for the National Longitudinal Survey of Children and Youth. A twenty-minute telephone survey instrument was developed.

The results presented in this paper focus on how parents interact with their children and parenting support. These results are based mainly on a descriptive analysis of the data that examined how parents responded to these questions. In some cases, the analysis considered whether or not there were significant differences in the way respondents with different socio-economic or other characteristics responded to a particular question or set of questions. In these instances standard statistical difference tests (chi-square) were employed. Only those differences that were found to be statistically significant at the 0.05 level are reported.

POPULATION DESCRIPTION

Most respondents (67%) were female (mothers). Responding parents came from all areas of the city. Briefly, respondents to the Parenting Survey were between the

ages of 30-39 (65% of respondents), and married (81%). The sample was highly educated, with half of the sample reporting having completed an undergraduate or post-graduate degree. Forty-one per cent reported an annual income in excess of $80,000. One-third of the sample (35%) reported their main activity as caring for a child, and another third (32%) reported that they worked and cared for a child. Seventy-five per cent of the sample reported their home language as English.

When demographic factors were examined according to one and two parent families, it was found that in comparison to their single-parent counterparts, parents in two-parent households are generally older, and have higher income and education levels.

HOW OTTAWA PARENTS INTERACT WITH THEIR CHILDREN

Respondents to the 2001 parenting survey were asked a number of questions related to parental involvement including how much time they spend doing different activities with their child, how often they read or tell a story to their child, what types of early childhood activities their child participates in, their own participation in activities or programs with their child, and where they get most of their information pertaining to parenting.

Frequency and Type of Interaction with Children

Table 1 shows that many Ottawa parents enjoy their young children and interact positively with them on a daily basis. In fact, the majority (69% to 82%) indicate that they praise, talk or play, and laugh together with their child many times a day.

For the most part there was no significant relationship between the socio-economic characteristics of parents and how often they interacted with their child. The only exception was in terms of who praised their child most often. In that case, language seems to make a difference. Compared

able 1

Frequency and Type of Interaction Between Parents and Children Ottawa Parenting Survey, 2001

Activity/Frequency	Many times a day	One or two times a day	Less Often
Praise their child	78%	18%	4%
Talk/play	69%	27%	4%
Laugh together	82%	15%	3%

to parents in general, parents who report a language other than English or French are less likely to indicate that they praise their child many times a day (71% versus 78%) and are more likely to report that this does not happen on a daily basis (9% versus 4%).

Reading and Literacy

When parents were asked how often in an average week they read or told a story to their child, two thirds of the respondents reported that they do this activity more than five times per week (Table 2). Parents of children age 2-3 and 4-5 were more likely to read to their child almost daily than those with younger children. Regardless of age, there is only a small percentage of parents who rarely or never read to their children.

Table 2

Frequency of Reading/Storytelling per week by Age of Child Ottawa Parenting Survey, 2001

Frequency	Age <2	Age 2-3	Age 4-5	All Ages
> 5 times per week	61%	69%	68%	66%
3-5 times per week	17%	17%	19%	18%
1-2 times per week	17%	12%	11%	13%
Never	5%	2%	2%	3%

An important component to early literacy is not only reading to one's child but to also encourage the child to tell stories and read (if age-appropriate). Results from the survey showed that the majority (61%) of parents also encourage their child to read or tell a story to them at least three times per week. Parents with children under the age of four are less likely to have their child read or tell a story to them than those with older children. It should be noted that the majority of parents with children under the age of two and almost half of those with children age 2-3 did not respond to this question.

The survey also asked parents how often in a month they used the library with their child. Almost half of the responding parents (47%) reported that they never use the library. This response varied with age as parents with children under the age of two were least likely to use the library (58% reported never use) compared with children age 4-5 (40% reported never use).

Participation in Early Childhood Programs

More than half (54%) of the responding parents reported that their child participates in a nursery school, play group or other early childhood program. The number of hours

the child attends one or more programs, according to parents, ranges from as low as one hour to as many as 50 hour per week. However, most children (70%) who participate in early childhood activities do so for less than 20 hours per week. Figure 1 shows that participation in early childhood programs varies by age of child with older children spending more time in early childhood programs:

About one fifth (21%) of the responding parents indicated that they had experienced difficulties accessing one or more of the early childhood programs available in the city. The main reason given for their difficulty was cost (42%) followed by transportation (25%), hours of operation (21%), and location (15%). Parents who are most likely to indicate that they have had difficulty accessing early childhood programs for their children are those who:

- are single parents (32%);
- have a child age 2-3 (26%);
- speak a language other than English or French at home (29%);
- have elementary or high school education (27%);
- report household incomes of less than $25,000 (35%).

Figure 1

Participation in Early Childhood Programs By Age of Child Ottawa Parenting Survey, 2001

For those parents who gave cost as a reason (N=96), 35% reported that they had applied for a subsidy from the City of Ottawa. Of those who had not applied for a subsidy, there were two main reasons given – "didn't think I would qualify" (43%), or "never heard of the subsidy" (43%).

Community Involvement

Respondents were asked whether or not they were involved in a number of child-related community activities. Almost half (48%) of the parents surveyed were not involved in

any of the activities listed. Of those parents who indicated some involvement, 55% were involved in one program, 26% in two programs, and 19% in three or more programs. In order of frequency, the activities and programs responding parents are most involved in are:

1. volunteering at day care/preschool/school (30%);
2. church-related activities (19%);
3. coach or assistant for child's sport team (12%);
4. neighbourhood association (9%);
5. Beavers or Sparks (5%);
6. Playground or recreation association/group (5%);
7. Block Parent (3%).

Parents who are most likely to be involved in activities or programs are those who:

- report having 3 or more children (69%);
- have a child age 4-5 (67%);
- speak English in their home (55%);
- are part of a two-parent household (54%) or larger, extended family (53%);
- have a household income of $80,000 or more (59%);
- have a university degree (mother=57%; father=56%);
- report their main activity as caring for their children at home (56%).

PARENTING SUPPORT

Respondents were asked in the survey where they usually went for parenting advice or information. Sources mentioned most often were family (67%) and friends (56%). Other sources in order of frequency are:
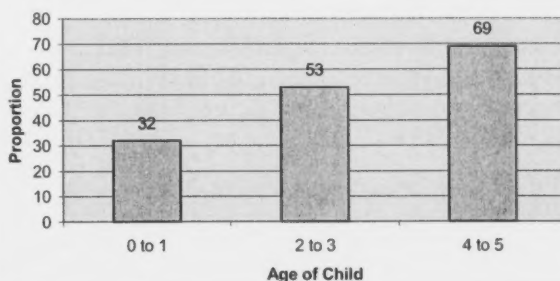
- Magazines 35%
- Doctor 32%
- Internet 22%
- Library 12%
- Public Health Dept. 12%
- Teacher or
- care provider 8%
- Parent resource centre 7%

A small percentage (3%) of responding parents reported that they were participating in a parenting program.

The majority (87%) of respondents to the 2001 Ottawa

Parenting Survey reported that when it comes to parenting information, they are getting the support they need most (50%) or all of the time (37%). However, it is clear that some parents feel they need more support. Parents who indicate they sometimes, hardly ever, or never get the support they need are those who:

- have children two years of age or older (35%);
- speak a language other than English or French in their home (23%);
- have a large or extended family (23%);
- are single parents (21%);
- have a household income of less than $25,000 (25%);
- have only an elementary or high school education (mother=18%; father=18%).

When asked about their preferred information source for parenting advice if the right information was made available. In order of preference, the following sources are those that parents report they would very likely use.

1. Doctor's office (60%)
2. Internet (57%)
3. Schools (40%)
4. Parenting magazine (38%)
5. Library (33%)
6. Specialty television channel (28%)
7. Newspaper (27%)
8. Parent Resource Centre (22%)
9. Community centre (18%)
10. Mall Kiosks (8%)

DISCUSSION

The 2001 City of Ottawa Parenting Survey provided a picture of parenting practices as they relate to healthy child development. The 1,205 households who responded to the survey were spread across the City geographically, and had an income and education distribution slightly higher than that of the rest of the City. Two-parent and single-parent households were included, as were households where a language other than English or French was spoken in the home. Most young children in the survey lived in today's typical small household with two parents, either as an only child or with one sibling, with parents in their 30s. The Parenting Survey results can therefore be reasonably indicative of common parenting practices in Ottawa.

It was encouraging to find that parents in all households report interacting positively with their young children, praising them, and talking and playing with them many times a day. Although parents report reading to their children, children are less frequently asked to read or tell a story to their parents, and almost half of the surveyed families never use the library. Of those parents who do take their children to the library, those with children aged 4 or 5 are most likely to go.

More than half of the children in the survey are involved in some kind of early childhood program such as a nursery school, playgroup, or recreation activity such as swimming. Programs that involve primarily physical activity are less popular. Parents with higher incomes and education are more likely to engage their child in a pre-school program. About a fifth of parent respondents face obstacles such as cost or transportation in accessing programs for their children.

Family and friends are the chief source of advice and support for parents. The majority of parents felt they were getting the parenting information they needed. Not surprisingly, those that feel less supported are more likely to be single parents, speak a language other than English or French, or have lower household incomes and less education. Interestingly, parents rated their doctor's office or the Internet or schools as the top three places they would most likely seek parenting information. Parent Resource Centres or Community Centres were eighth and ninth on a list of ten sources of parenting information. ❑

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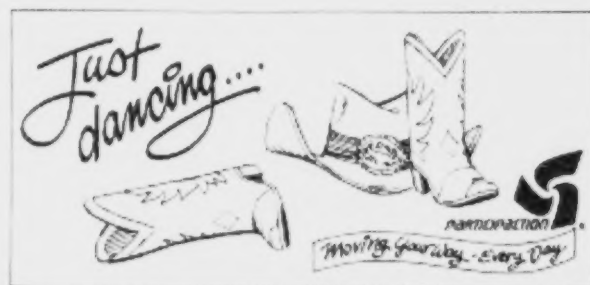
Summary of Reportable Diseases in Ontario - June, 2003

Health Units by Region	Population 2001	AIDS	Campylo.	Chicken-pox	Chlamydia	Enceph./Meningitis	GAS	Gonorrhea
Algoma	117,200			1	13		2	3
North Bay	92,950			67	8			
Northwestern	75,085		1	4	15			1
Porcupine	84,755		2	19	10			
Sudbury	188,365		3	4	24		1	1
Thunder Bay	152,800		2		29			1
Timiskaming	35,335		1	8	3			
Total - Northern	746,490		9	103	102		3	6
Eastern Ontario	185,975		4	2	12			1
Hastings & Prince Edward	150,805		2	2	18			
Kingston, Frontenac & Lennox	178,065		2		20			
Leeds, Grenville & Lanark	159,100		1					
Ottawa	774,070	1	17		74	3	4	9
Renfrew	96,465		2	83	7		1	
Total- Eastern	1,544,480	1	28	87	131	3	5	10
Durham	506,900	1	12	309	45	1	3	8
Haliburton-Kawartha	161,770		7		5	1		
Muskoka-Parry Sound	80,500		2	2	4	1		
Peel	988,950		19		130	4	5	31
Peterborough	125,860		6	19	13		3	
Simcoe	377,030		6	57	29		3	
Toronto - total	2,481,495	1	104	222	484	10	6	155
North			24	32	94	2	3	20
South		1	45	61	178	3	1	79
East			17	40	135	2	2	28
West			18	89	77	3		28
York	728,980		29	57	54	7		4
Total - Central East	5,451,485	2	185	666	764	23	21	198
Grey Bruce	152,380		3	9	10			1
Elgin-St. Thomas	81,560			4	8	1		
Huron	59,695		5		3	1		1
Chatham-Kent	107,705		2	11	15		1	1
Lambton	124,295					1		
Middlesex-London	403,180		7		37		1	10
Oxford	99,265		3					
Perth	73,680		6	7	8	1		
Windsor-Essex	374,985		13	18	40	2	1	1
Total - Southwest	1,476,745		39	49	121	6	3	14
Brant	118,085		1	72	11			2
Haldimand-Norfolk	104,580		1	6	5		1	1
Halton	375,230		14		17		1	2
Hamilton	490,270		8	20	74	1	1	14
Niagara	410,570		11	152	42		1	10
Waterloo	438,515		20		38		1	7
Wellington-Dufferin-Guelph	238,315		10	3	21		1	1
Total - Central West	2,175,565		65	253	208	1	6	37
June 2003	11,394,765	3	326	1,158	1,326	33	38	265
* Total YTD 2003	-	45	1,429	9,446	8,760	177	264	1,445
* Total YTD 2002	-	61	1,896	10,985	8,890	199	219	1,450

The Toronto City regions above are now defined as: North - former North York, South - former City of Toronto; West - former Etobicoke and City of York; East - former Scarborough and East York

** Infectious Syphilis cases include 'Primary, Secondary and Early Latent' staging effective January 1, 2003

* Adjusted for deletions and late reports.

Summary of Reportable Diseases in Ontario - June, 2003

Health Units by Region	Population 2001	Hepatitis A	Hepatitis B	Hepatitis C	Hib	Influenza	Measles	Meningo-coccal
Algoma	117,200			4				
North Bay	92,950			1				
Northwestern	75,085			1				
Porcupine	84,755							
Sudbury	188,365		3	10				
Thunder Bay	152,800		2	10				
Timiskaming	35,335							
Total - Northern	746,490		5	26				
Eastern Ontario	185,975			3				
Hastings & Prince Edward	150,805			2				
Kingston, Frontenac & Lennox	178,065	1						
Leeds, Grenville & Lanark	159,100		1	5				
Ottawa	774,070	1		20		3		
Renfrew	96,465							
Total- Eastern	1,544,480	2	1	30		3		
Durham	506,900							
Haliburton-Kawartha	161,770			12				
Muskoka-Parry Sound	80,500							
Peel	988,950			29		1		
Peterborough	125,860		1	6				
Simcoe	377,030			15				
Toronto - total	2,481,495		6	107	2	1	4	
North			1	26	1			
South			4	39		1	4	
East			1	24				
West				18	1			
York	728,980			10				
Total - Central East	5,451,485		7	179	2	2	4	
Grey Bruce	152,380		1	5				
Elgin-St. Thomas	81,560			2				
Huron	59,695			1				1
Chatham-Kent	107,705			5				
Lambton	124,295							
Middlesex-London	403,180			16				
Oxford	99,265			1				
Perth	73,680			1				
Windsor-Essex	374,985	1		10				
Total - Southwest	1,476,745	1	1	41				1
Brant	118,085			3		1		
Haldimand-Norfolk	104,580							
Halton	375,230	1		8				
Hamilton	490,270			31		1		
Niagara	410,570			22				
Waterloo	438,515			13				
Wellington-Dufferin-Guelph	238,315			1				
Total - Central West	2,175,565	1		78		2		
June 2003	11,394,765	4	14	354	2	7	4	1
* Total YTD 2003	-	56	56	2,428	6	446	9	26
* Total YTD 2002	-	54	61	2,699	2	2,172		34

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** Infectious Syphilis cases include 'Primary, Secondary and Early Latent' staging effective January 1, 2003

* Adjusted for deletions and late reports.

Summary of Reportable Diseases in Ontario - June, 2003

Health Units by Region	Population 2001	Mumps	Pertussis	Rubella	Salmon.	Shigellosis	Syphilis Infectious**	VTEC
Algoma	117,200		3					
North Bay	92,950							
Northwestern	75,085				2			
Porcupine	84,755				1			
Sudbury	188,365							
Thunder Bay	152,800				2			
Timiskaming	35,335							
Total - Northern	746,490		3		5			
Eastern Ontario	185,975		4		2			
Hastings & Prince Edward	150,805		1		4			
Kingston, Frontenac & Lennox	178,065							
Leeds, Grenville & Lanark	159,100				2			1
Ottawa	774,070		5		12	1	6	2
Renfrew	96,465				2			1
Total- Eastern	1,544,480		10		22	1	6	4
Durham	506,900		2		7			
Haliburton-Kawartha	161,770				3			1
Muskoka-Parry Sound	80,500				1			
Peel	988,950		1		12	6	2	2
Peterborough	125,860				1			
Simcoe	377,030				3	1		
Toronto - total	2,481,495				41	4	27	3
North					12	1	1	1
South					13		23	
East					8	1		1
West					8	2	3	1
York	728,980		1		13	1	1	1
Total - Central East	5,451,485		4		81	12	30	7
Grey Bruce	152,380				2			1
Elgin-St. Thomas	81,560							
Huron	59,695				1			1
Chatham-Kent	107,705				1			1
Lambton	124,295							
Middlesex-London	403,180		1		10			
Oxford	99,265				1			
Perth	73,680				2			
Windsor-Essex	374,985		1		2		1	
Total - Southwest	1,476,745		2		19		1	3
Brant	118,085				1			
Haldimand-Norfolk	104,580		3		1			
Halton	375,230				4		1	65
Hamilton	490,270				9		1	2
Niagara	410,570				9			1
Waterloo	438,515				2			3
Wellington-Dufferin-Guelph	238,315				5	1		4
Total - Central West	2,175,565		3		31	1	2	75
June 2003	11,394,765		22		158	14	39	89
* Total YTD 2003	-	8	137	5	853	139	158	245
* Total YTD 2002	-	8	202	1	1,040	686	68	112

The Toronto City regions above are now defined as: North - former North York; South - former City of Toronto; West - former Etobicoke and City of York; East - former Scarborough and East York

** Infectious Syphilis cases include 'Primary, Secondary and Early Latent' staging effective January 1, 2003

* Adjusted for deletions and late reports.